REMARKS/ARGUMENTS

Applicants amended the paragraph on page 8, lines 4-26 to correct the reference number for the K threshold matrix in FIG. 3 to "56"

Applicants amended claims 6, 22, and 38 to overcome the indefiniteness rejection (35 U.S.C. §112, par. 2) by providing antecedent basis for the "greater LPI". Applicants request that the Examiner withdraw this rejection.

1. Claims 1, 2, 4, 5, 9, 12-18, 21, 25, 28-34, 37, 41, and 44-50

The Examiner rejected claims 1, 2, 4, 5, 9, 12-18, 21, 25, 28-34, 37, 41, and 44-50 as anticipated by Kitagawa (U.S. Patent No. 5,055,923). Applicants traverse.

Independent claims 1, 17, and 33 concern halftoning an input image comprised of at least two input color components, wherein each input color component provides input intensity values for the color component at pixel locations in the image. The claims require accessing at least two halftoning screens, wherein there is one screen for each color component, and wherein at least one of the screens generates halftone output having a lines per inch (LPI) that is at least approximately twenty percent different than the LPI of halftone output generated by one other screen; separating the input image into the separate color components; and applying the accessed screen for each color component to the input intensity values for the color component to produce the halftone output for the color component, wherein the combined halftone output for all the color components form the output pixels in a manner that reduces the moiré effect .

Applicants amended claims 1, 17, and 37 to clarify that using the halftone outputs, where one halftone output has a lines per inch (LPI) that is at least approximately twenty percent different than the LPI of halftone output generated by one other screen, reduces the moiré effect. This added requirement is disclosed on at least pg. 5, lines 22-27; pg. 8, line 27 to pg. 9, line 12; pg. 11, lines 16-25 of the Application.

The Examiner cited col. 19, lines 27-43 as disclosing the claim requirement that one of the screens generates halftone output having a lines per inch (LPI) that is at least approximately twenty percent different than the LPI of halftone output generated by one other screen. (Office Action, pgs. 4-5)

The cited col. 19 mentions that the differences of the substantial screen rulings of halftone images is less than 20 percent. Kitagawa defines the "substantial screen ruling" as the

number of parallel lines per inch, which may form parallelograms as shown in FIG. 3D. (col. 16, lines 5-30) Kitagawa mentions that when the substantial screen rulings become larger than about 20 percent, image instability and problems occur. see, (col. 16, lines 30-67)

The claims require that the lines per inch (LPI) of one halftone output is at least twenty percent different than the LPI of one other screen output. The cited Kitagawa mentions the opposite of this requirement, and mentions that image instability and problems occur, such as a moire effect, when differences in the substantial screen rulings, or parallel lines per inch, differ by more than 20 percent. The claims on the other hand require the use of halftone outputs that have LPIs different by at least approximately twenty percent.

Moreover, the claims were amended to recite that using the halftone outputs, having at least a 20 percent difference in their LPIs, reduces the moiré effect. Nowhere does the cited Kitagawa anywhere disclose using halftone screens whose outputs are at least 20% different to reduce the moiré effect. In fact, the cited Kitagawa teaches away from this claim requirement because Kitagawa specifically states that when the differences among the substantially screen rulings, or parallel LPI is larger than 20% image problems, such as moiré effects, occur. Thus, the cited Kitagawa teaches the opposite of what is claimed.

Accordingly, claims 1, 17, and 33 are patentable over the cited art because the cited Kitagawa does not disclose all the claim requirements.

Claims 2, 4, 5, 9, 12-16, 18, 21, 25, 28-34, 41, and 44-50 are patentable over the cited art because they depend from one of claims 1, 17, and 33. The below discussed dependent claims provide additional grounds of patentability over the cited art.

Claims 5, 21, and 37 depend from claims 4, 20, and 36, which require that the four color components are cyan (C), magenta (M), yellow (Y), and black (K). Claims 5, 21, and 37 further require that the halftone output generated by the screen for the black (K) color component has an LPI that is at least approximately 20% greater than the LPI of the halftone output generated by at least one of the other cyan (C), magenta (M), and yellow (Y) screens.

The Examiner cited col. 19, lines 25-29 of Kitagawa as disclosing the additional requirements of these claims. (Office Action, pgs. 4-5) Applicants traverse.

As discussed, the cited col. 19 discusses how difference of the substantial screen rulings of the halftone images have an LPI that differ by less than about 20 percent. This teaches away from having any color component having a halftone output greater than 20% to reduce the moiré

effect. Further, nowhere does the cited col. 19 disclose that the black color component (K) has an LPI that is at least approximately 20% greater than others.

Accordingly, claims 5, 21, and 37 provide additional grounds of patentability over the cited art because the additional requirements of these claims are not found in the cited art.

Claims 9, 25, and 41 depend from claims 1, 17, and 33 and further require that the LPIs of the halftone outputs generated by at least two of the screens have a ratio of approximately 3:2 or 4:2 or the LPI of the halftone output generated by at least one screen is approximately an integer multiple of the LPI of the halftone output generated by at least one other screen.

The Examiner cited col. 19, lines 25-42 and col. 20, lines 17-59 of Kitagawa as disclosing the additional requirements of these claims. (Office Action, pg. 5) Applicants traverse.

As discussed, the cited col. 19 mentions that the halftone images have a substantial screen ruling, or parallel lines per inch, that differs by less than 20% and that image problems occur with greater differences. Claims 9, 25, and 41 require that the LPIs of at least two halftone outputs differ by 4:2, or almost double or 3:2, which is one-and-half times different. These differences in LPI far exceed the twenty percent difference recited in the base claims. Thus, these claims provide even further differences and grounds of distinction over the cited art because the LPI difference in the halftone output of these claims is even greater than the parallel LPI mentioned in the cited col. 19.

The cited col. 20 mentions how the screen pitch of a halftone image for a same color (c) is different by 2/3 in FIGs. 15B and 17B, which shows halftone images for color component (C). This cited col. 20 does not discuss a 2/3 difference in LPI between halftone images for different color components. In fact, the cited col. 19 mentions that the parallel LPI between difference color images (Im4 and (c4) is less than 20%.

Accordingly, claims 9, 25, and 41 provide additional grounds of patentability over the cited art because the additional requirements of these claims are not found in the cited art.

2. Claims 6-8, 10, 22-24, 26, 36, 38-40, and 42

The Examiner rejected claims 6-8, 10, 22-24, 26, 36, 38-40, and 42 as obvious (35 U.S.C. §103) over Kitagawa. Applicants traverse.

First off, these claims are patentable over the cited art because they depend from base claims 1, 17, and 33, which are patentable over the cited art for the reasons discussed above.

Further, the additional requirements of these claims in combination with the requirements of the base and intervening claims provide further grounds of distinction over the cited art.

Conclusion

For all the above reasons, Applicant submits that the pending claims 1-50 are patentable over the art of record. Applicants submit herewith the fee for a one-month extension of time. Nonetheless, should any additional fees be required, please charge Deposit Account No. 50-0563.

The attorney of record invites the Examiner to contact him at (310) 553-7977 if the Examiner believes such contact would advance the prosecution of the case.

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